

2nd VOLUME





*Financing  
Mitigation  
and Adaptation*



HAROLDO MACHADO FILHO E THIAGO DE ARAÚJO MENDES



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CEBRI is a Think Tank that aims at developing knowledge and promoting debate on topics concerning international relations, offering subsidies to the definition of public policies. It also seeks to foster dialogue among different players, both in the public and private sectors, aiming at a better understating of the international agenda, as well as Brazil's role in the global scenario.

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# Presentation

Convinced of the importance of discussing issues related to sustainable development and seeking to contribute to the implementation of the decisions agreed by countries in environmental multilateral meetings, the Brazilian Center for International Relations (CEBRI), with the important support of the Konrad Adenauer Foundation (KAS), developed, in 2013, the project Pathways to 'The future we want'.

Through this initiative, CEBRI intends to promote knowledge and give visibility to three important multilateral processes boosted by the Rio+20 Conference (2012); namely:

*(i) The search for indicators that complement the measure of the Gross Domestic Product, including measures of social well-being and sustainability;*

*(ii) The analysis of the global mechanisms for financing mitigation and adaptation to climate change;*

*(iii) The creation of the Goals of Sustainable Development.*

In this article, Haroldo Machado Filho and Thiago Mendes introduce the reader to the complex architecture of international funding available for mitigation and adaptation to climate change. In a very consistent manner, the authors propose an analysis on the institutional and political context in which the creation and maintenance of these financial mechanisms occur.

Emphasizing the truly global spatial scale of climate change, Machado Filho and Mendes highlight the importance of international cooperation to promote the transformation to a low-carbon world and with more resilient societies to climate change. However, the authors show that the negotiations in multilateral forums aimed at the question of financing have been marked by slow decision-making and the absence of clear rules that guide the implementation of the agreements.

In view of the urgency of the climate problem, we hope that this work can contribute to the understanding of the main issues that permeate the debate about the need for financing and investment for mitigation and adaptation. Still, it is our goal to provide subsidies for a constructive role of Brazil in the establishment and implementation of international funds.

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## 1 Introduction

The problem of global warming has a different nature from any other political problem, due to its temporal scale (future dimension) or space (global in effect). Thus, it is indispensable that the climate change policy handle the following paradox: even knowing risks and dangers, they are not immediate and evident in the daily life and, this way, a little is done in what regards this problem. However, "waiting until they become visible and acute before being stirred to serious action will, by definition, be too late" ("Giddens's Paradox" – Giddens, 2009, pg. 20; Mendes, 2010).

Due to the nature and the global scale of the climate problem, it is understood that no country or society can solve it alone. Therefore, there would not be another way but international cooperation. And to carry out a change to a "low-carbon" world and with more resilient societies to world global change, great financing and investment flows will be needed.

Bearing this complex scenario in mind, this work has the objective of presenting an analysis on the institutional and political context in which occurs the creation and maintenance of financing mechanisms for the mitigation and adaption to the world's climate change. Next, the most important aspects of national and international financing mechanisms will be analyzed.

## 2 The challenge of quantifying international finance for adaptation and mitigation to climate change

The understanding of how much and what kind of financing is (or should be) available to stimulate the growth of low carbon and fight world climate change is essential to increase these resources and to ensure that they are effectively used. But the basic question is: what would this financing be? Financing to fight climate change corresponds to financial flows that have as goals reduction of net emissions of greenhouse gases (mitigation), as well as increase flexibility towards adverse effects of global warming (adaptation).

According to the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), there are several multilateral and bilateral mechanisms that support adaption and actions on mitigation of climate change (UNFCCC, 2007). Public and private resources make up this international financing, which can be

directly related to conventions, agreements and international treaties. In the world, it is estimated the existence of more than 50 public funds, as well as 45 carbon markets and about 6,000 participation funds that support the financing of this fighting actions against the climate change (UNDP, 2011).

Development banks, bodies and organisms of the United Nations, among others,<sup>1</sup> are multilateral organism through which the multilateral financing is structured. There is also bilateral cooperation regarding the allocation processes of resources between both countries and the resources allocation from a country to fund and multilateral organisms (Rodrigues, Mendes and Alves, 2012).

Developed countries reckon that an expressive part of international public financing of development actions is considered Official Development Assistance (ODA), becoming available by international cooperation mechanisms (OECD, 2010).<sup>2</sup> Thus, refundable and nonrefundable<sup>3</sup> resources are sent to developing countries that are part of receivers list of ODA, of the Development Committee Assistance (DAC) of the Organization for Economic Co-operation and

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Thiago de Araújo Mendes

Note 01

Such as the Inter-American Development Bank (IDB), the World Bank, and the United Nations Development Program (UNDP), the United Nations Environmental Program (UNEP), and the Food and Agriculture Organization of the United Nations (FAO).

Development (OECD).<sup>4</sup> Official institutions of the donor country offer International cooperation classified ODA, having as the main goal promoting economic growth and well-being to the beneficiary country. In case of loans, for example, ODA must offer, in donation character, at least 25%.

However, due to the nature and origin of historical causes of the problem and agreements signed by countries at the Climate Change Convention, resources coming from ODA should not be move aside of the climate change theme. According to the parameters of UNFCCC, developed countries must provide new and additional financing resources to support actions of Greenhouse Gases emissions and to implement

some measures – above all mitigation, but also adaptation – in developing countries (see Box 1 about UNFCCC).

Regarding what was promised in the UNFCCC scope, quantification, even though approximate, of the provision of resources is still a challenge. Moreover, the measure of what is “new and additional” is technically very difficult, since the definition of a baseline (or base year) is not an easy task, due to the large number of indexes and bilateral and multilateral channels. Therefore, it is extremely hard to verify if Parts of Annex II are allocating new and additional resources that are different of the traditional ODA, for example. Although there is no clear definition regarding the Convention of what

**Note 02**

According to the Organization for Economic Co-operation and Development (OECD), ODA can be understood as “provided by official agencies, including state and local governments, or by their executive agencies; and each transaction of which is administered with the promotion of the economic development and welfare of developing countries as its main objective; and is concessional in character and conveys a grant element of at least 25 per cent (calculated at a rate of discount of 10 per cent)” (OECD, 2013).

**Note 03**

The resources invested in international cooperation can be of financial character (through reimbursable resources, as loans, and non-refundable, as donations); of technical character (through the exchange of information and people, for example); and of scientific-technological character (aimed at creating and strengthening capacities for research and technology development in the recipient country) (RODRIGUES, MENDES and ALVES, 2012, p. 27).

**Note 04**

Brazil is in the list of DAC to receive resources from ODA.

**Box 1 The United Nations Framework Convention on Climate Change**

The United Nations Framework Convention on Climate Change (UNFCCC) was signed at Rio-92 (United Nations Conference on Environment and Development). The Convention became effective on March 21, 1994 and, nowadays, has almost universal adherence. All the 195 countries that ratified the Convention are called Parties of the Convention. UNFCCC establishes obligations to both parties: developing country Parties (who are responsible for implementing more sustainable measures and policies) and developed country Parties (who are responsible for financing this implementation).

According to **article 4.3** of the Convention, the developed country Parties and other developed Parties included in Annex II agree in providing new and additional financing resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations forecast at the Convention. They also agree to provide resources to meet additional costs, including for the transfer of technology, resulting from the implementation of the established measures.

According to **article 4.4** of the Convention, “the developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaption to those adverse effects”.

In order to regulate the provision of these resources, which can be done through donations or on a concessional basis, **article 11** establishes a mechanism of financial resources that shall function under the guidance of the Conference of the Parties. The Conference is responsible for deciding on its policies, program priorities and eligibility criteria related to this Convention.

It is highlighted that **Annex II** of UNFCCC comprehends, essentially, the richer countries that were members of the Organization for Economic Co-operation and Development – OECD, in 1992, and/or Economic European Community, thus, excluding “economies in transition”. The countries included in Annex II of the Convention have different commitments to financial resources and transfer of technology according to their different capacities to provide such resources and technologies. Turkey, although being member of OECD in 1992, was excluded from Annex II by an amendment that came into force on June 28, 2002, in accordance to a decision approved at COP 7 (decision 26/CP 7).



could be “new”, such adjective suggests that, by default, “it is a matter of right and not charity” (B. MÜLLER, 2006, pg. 4), as ODA’s assistance is. In an international financial crisis, in which resources are scarce, a usual strategy adopted by countries is to “repackage” traditional help and present it with a new “wrapping”, which characterizes it as an action to fight climate change.

Several estimations aim at dimensioning the financing amount needed to the suitable adaption and mitigation of climate change, inside and out UNFCCC, without having, however, a consensus about the amount needed. Some of the problems of quantification are related to the lack of common definitions to important concept and a lack of a comprehensive system to monitor financing flows. Moreover, quantitative data is limited, comprehending only part of the global investment and they are not comparable due to different hypothesis.

The methodologies used are also different; they might have gaps and/or double counting of values. Even with complete data on the total amount of resources offered by sources and intermediates during a certain period of time, a difference can be noticed regarding the values received by beneficiary countries, due to the period of time between commitments and disbursement, fluctuations in exchange rates, costs of risk mitigation and other transaction costs, etc. For those and other reasons, estimates of funding to implement actions of adaption and mitigation to climate change are unclear.

According to one of the most mentioned studies on the matter, it is estimated that the global annual financing is about US\$343 - 385 billion, on average US\$364 billion, in 2010/2011 (Buchner et al., 2012).<sup>5</sup> This amount is based on a combination of instruments and a variety of sources and intermediates.

The biggest part of the resources destined to climate change for actions on adaption and mitigation of climate change comes from private financing. In this estimation, the private sector contributed to most of the financing, about US\$ 217 – 243 billion, or 63% of the total. Almost two thirds of private financing came from developed countries, since private actors in these countries were responsible for US\$ 143 billion and US\$ 68 – 70 billion in financial assets. In developing

countries, the private actors contributed with US\$85 billion and with US\$ 64 – 87 billion in financial assets (Buchner et. al., 2011).

Based on these calculations, it is possible to observe that, in 2010/2011, the public sector contributed to a part equal to 5 – 6% of the total value (US\$ 16-23 billion) and acted as an instigator of private financing and of provision of bilateral support to other developing countries. A big part of this number reflects domestic supports of government to renewable energy and infrastructure projects related to drivers of economic growth. Public and private intermediates, especially national development banks and commercial banks, played an important role to increase and direct global financing to fight climate change (US\$ 110-120 billion) (Buchner et al., 2012).

Although projections on costs of climate change are varied and inconclusive, it can be said that gathering resources to financing will demand more and more the use of wide sources and types of financing, both public and private. For example, The International Energy Agency forecast that to meet the goal of the curved line of emissions corresponding to 2°C, the additional investment only in the energy sector will have to reach US\$36 trillion during the period from 2012 to 2050, or about US\$ trillion a year (IEA, 2012). Furthermore, it is reckoned that adaptation efforts in developing countries can cost in 2050 up to US\$ 100 billion a year (Rodrigues, Mendes and Alves, 2012).

### 3 International Financial Architecture

#### 3.1 Institutional arrangements of the United Nations Framework Convention on Climate Change

The international architecture of “climate financing” is complex and is still developing. The following figure seeks to widely present the institutional ways and channels in which multilateral fund flows run. In the figure, flows that run inside and out of the financing mechanisms of UNFCCC are represented, including bilateral channels and national funds of climate change, such as Climate and Amazon Funds of Brazil.

As it can be observed, there is a big division of sources. In fact, financing corresponds to a mosaic of processes and institutions in international (by means of bilateral and multilateral channels) and national areas. In both levels, different

#### Note 05

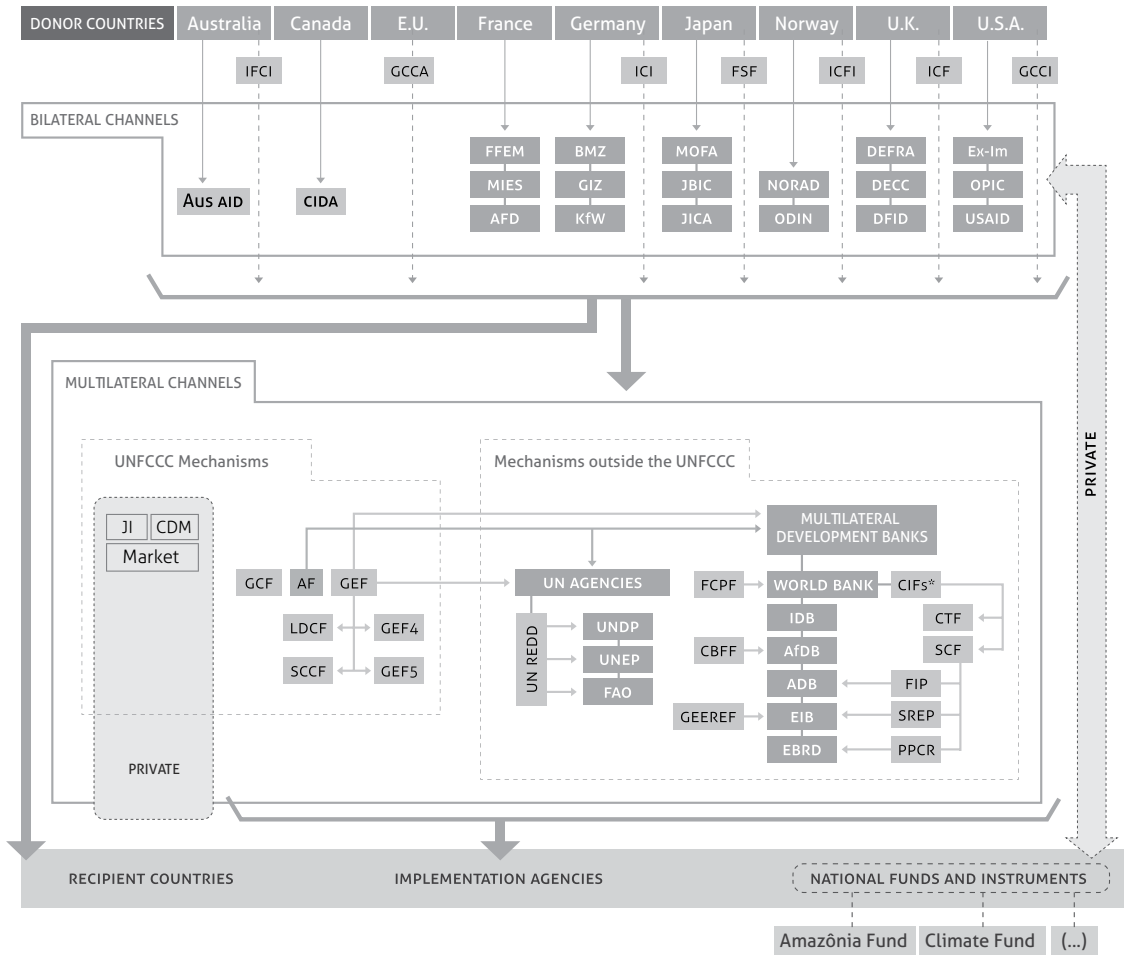
For the purpose of this study, financing flows are limited to “specific financing concerning the climate”, specially referring to capital flows with focus on low carbon and resilient development to climate. These flows can have results directly or indirectly related to mitigation or adaptation of climate change. In the study, to the extent possible, depending on the dissolution of available data, only investment flows directed to tangible physical assets, such as, for example, wind farms, were considered. Investments in measures such as research and development and manufacturing and increase of scale (deployment) were excluded, to the extent possible, because those may not result in emission reductions and with the goal of reducing the risk of double counting of resources. For further details on the methodology employed in the study, see Buchner et al., 2012, pp. 12-17.

beneficiary countries, themes and sectors are involved (for example, forests, agriculture, energy, transportation, etc.).

This division reflects and expands asymmetries between regions, countries and thematic groups: what makes possible political coexistence of competitor groups. Furthermore, the diversity of sources keeps in evidence approaches that do not always expose fundamental internal contradictions such as: limitation of sectors and

market approaches and potential trade-offs between mitigation and adaptation.<sup>6</sup>

However, it is widely acknowledged that developing countries face financial and other restrictions, and that economic and social growth and eradication of poverty are their main priorities. These are the main obstacles against a deeper involvement of developing countries with the implementation of environmental rules, including the ones within the global climate change regime.



**Note 06**  
In the choice of approaches of action, and in the direction of resources, one must reflect on the existence of trade-offs in the global scope and, especially, in the local or plant scopes. Interfaces of the origins of the resources of adaptation actions are also worth mentioning. As it happens in the propositions of mitigation measures, the polluter-pays principle should be the cornerstone to cover the costs of adaptation mechanisms; including insurance and strategies to deal with losses and damages. For the most part, these measures must be honored by the developed countries.

Image 1 International Finance Architecture. Source: Rodrigues, 2013 (adapted from Caravani et al. 2012).

With the goal of reducing inequalities between States and foster a wider participation on the implementation of goals signed at UNFCCC and at the Kyoto Protocol, the Parties of these agreements established an outline to offer financial resources. Thus, in consonance with the Principle of Common but Differentiated Responsibilities (PCBDR) and respective capacities, Annex II of UNFCCC has a list of Parties that will offer international assistance,

including financial resources and transfer of technology.

Finance in the UNFCCC scope is limited to international flows from governments of countries in Annex II to developing countries to provide total additional costs agreed for actions on mitigation, assistance in meeting adaptation costs to adverse effects of climate change, and full provision of reports on which the Parties committed

themselves to prepare in the Convention scope (ex.: National Communications).

Nevertheless, these dispositions are usually a source of dispute between donor and beneficiary countries, due to inaccuracy of their languages. In general, developed countries (Annex II) report, by means of their national communications, financing resources that are sent to developing countries through bilateral and multilateral channels to fight global climate change.

The most recent report that provides the summary of financing provided by Annex II in the UNFCCC scope indicates that they offered a total amount of US\$58.4 billion during the period between 2005 and 2010, which represents an average of less than US\$ 10 billion a year (UNFCCC, 2011). From this total, it is verified that most of the funds given are concessional loans and grants. This way, the financing reported according to UNFCCC "accountability" represents less than 3% of the current financing and about 15 to 25% of the international public financing is destined to developing countries.

The analysis on provision of financing resources identified on normative legal instruments and others under the climate change regime show that developed countries did not commit themselves to certain financing levels and, consequently, resources are entirely offered by discretionary grants. Taking into account all these concerns regarding provision and accessibility of financial resources under the climate change regime, as it happens in other environmental multilateral regimes, the developing country Parties have constantly assured that the resources given by their developed counterparts are not enough to meet the commitments they agreed on the framework of such regimes.

In view of growing frustration from developing countries vis-à-vis obtaining funds and the related issues, many of these States consider that the formulation on provision of financing resource in the UNFCCC scope and the Kyoto Protocol served as a "bait" to persuade them to participate on these international agreements. In the developed countries' view, the complaints coming from developing countries have been used as an excuse to justify the fact that they are not meeting their commitments, or to avoid agreeing on additional commitments. As it can be noticed, the financing

assistance support became one of the biggest bones of contention in multilateral regime of climate change.

### 3.2 Green Climate Fund (GCF)

Considering the several problems of implementation identified regarding the Convention, a decision was made at the 11th Conference of the Parties at UNFCCC. At COP 11, it was established a dialogue on "cooperative action of long term to fight climate changes, reinforcing the implementation of the Convention". The dialogue, in its turn, led to adoption of the "Bali Action Plan" (BAP), at COP 13, in 2007.

Despite having the five principles of BAP (shared vision, emission reductions – or mitigation-, adaptation, financing and transfer of technology) defined in 2007, the agreement on the main topics of each one of the principles was only possible in 2010, at COP 16, in Cancun. On the document that provides these decisions, named "Cancun Agreements", there are specific paragraphs both about financing through fast and long term tracks (Decision 1/C.P., paragraphs 95-98).

The language on fast track financing is pretty weak. The text "takes note on collective commitment of developed countries to offer new and additional resources and investments by means of international institutions, getting close to an amount of almost US\$30 billion for the period of 2010-2012". Nonetheless, what would be new resources and what kind of financing to be promoted were not established.

In what regards long-term financing, the document says that developed countries have the commitment of meeting "the goal of jointly gather US\$100 billion a year until 2020 to meet the demands of developing countries", conditioned to the occurrence of significant actions on mitigation and transparent implementation by the beneficiary countries. Still, it is needed to observe that a gathering commitment is only a promise to organize and stimulate certain actors to act in a harmonious way to meet a specific goal and it cannot be exactly characterized as an allocation or disbursement commitment. Moreover, the reference to the amount of US\$100 billion does not mention "new and additional" resources and, therefore, can comprehend already existent or predicted funds. Either way, even if the sum of

US\$100 billion a year up to 2020 happens, it is not certain that the same will be enough to meet the demands of developing countries (Machado-Filho, 2011).

But the main outcome regarding the “financing principle” was the decision that created the Green Climate Fund (GCF), by means of which a significant part of the new multilateral financing for adaptation must be operated (Decision 1/C.P. 16, paragraphs 102-111).

This fund was destined as an operational entity of financing mechanism of UNFCCC, according to article 11, a decision celebrated by developing countries. Furthermore, the Fund must render accounts and function according to the guidelines of the Conference of the Parties “to support projects, programs, policies and other activities in developing country Parties, using thematic windows of financing” (Decision 1/ C.P. 16, paragraph 102). This means the end of monopoly of Global Environmental Facility (GEF) as an operational entity of financing mechanism of UNFCCC.

Notwithstanding, it is early to affirm that the Fund is the adequate solution to solve the climate financing, since many of the operational provisions still need to be ended (Decision 6/C.P. 18). A discussion that will be decisive for the GCF success is how the resources will be raised. The financing sources probably, will be discussed out of UNFCCC (for example, at G20), but the concrete outcomes of this debate must lead a negotiation process. The risk of the GCF becoming an empty fund should not be discarded, since the main reasons on who will pay and how, and on the balance between public and private financing are still to be settled. If the debate on how the funds will be gathered still seems far from a solution, the situation is not much different regarding the debate on how the funds will be disbursed and distributed.

While financing commitment for fast and long-term tracks financings have been debated, the fundamental question that has still not been clarified is if the resources the developed countries have already agreed to disburse (US\$ 30 billion during 2011-2012 and US\$100 billion up to 2020) will flow to the GCF.

It must be highlighted that all this discussion on the new architecture of the financing mechanism

of UNFCCC has been carried out in a period of fiscal and budgetary restrictions, what cannot be used as an excuse for inactivity. The volume of money gathered by the government in the past years to help industries and financing institutions is a proof that significant financing resources can be raised, as long as there is government will. The crisis must be seen as an opportunity to create new resources to be directed to more efficient societies, within a low carbon paradigm, and more resistant to global climate change.

#### **4 How can we make progress in finance provisions?**

##### **4.1 Public and private investments**

Recently, there was an increase and a diversification of financing sources and mechanisms for adaptation and mitigation of climate change. Several market instruments, such as carbon markets, are used to raise resources to finance actions on climate change (Glemarec, 2011). However, increase and diversification do not necessarily mean a better effectiveness in the use of resources.

Even though these are substantial values, there are still great challenges to promote low carbon investments, among which it is possible to highlight: higher investment costs, low rates of return on investment in short and medium terms, high risk perception and reduced scale of these projects. To amplify the level of private low carbon investments, political and financing instruments, are needed to, among other things, ensure stability of cash flow, strengthen provision of equity and risk mitigation.

In order to increase effective and sustainable financing of low carbon technologies, it is imperative the establishment of more favorable lines of funding and adequate governance mechanisms in international level – but, overall, in the national and local levels. In this sense, it is highlighted the role of the State as “granter” of political and economic convergence processes that support and stimulate social actors to adopt necessary measures for the generalized solution of the problem (Giddens, 2009). Another important role of the State is to concern to long-term planning, which is needed to deal with global challenge of gathering resources for mitigation and adaptation in a continued and stable way.

The public sector must act, still, as an instigator

of private financing, also being a driver for the economic growth by means of financing clean energy projects and related infrastructures (Buchner et al., 2012). National development banks and commercial banks also have an important role to expand and direct global financing to fight climate change, offering favorable conditions so that the private sector can invest in activities that promote low carbon or increase flexibility of societies to adverse effects of global warming.

#### 4.2 Transfer of technology and innovation

Despite the occasional spikes in oil prices, the supply of fossil fuels over the past three decades has involved relatively low costs, which helped shape the current fuel consumption habits of populations on the planet. According to most economic and energy scenarios, the trend toward production of primary energy from this type of fuel will continue, at least until the first half of the 21st century.

Alternatives to fossil fuels that emit little or no greenhouse gas (GHG) emissions are, in general, substantially more expensive - although it should be recognized that its costs are reducing progressively. Furthermore, most countries are unable or are unwilling to face the high price of exploiting alternative energy sources, which are not available everywhere and are often expensive to be produced, transported and transformed into final energy.

For these and other reasons, the matter of technology transfer is crucial to address issues relating to the mitigation and adaptation to climate change. That's because the technologies known of low or no GHG emissions - for example, for the transformation of solar and wind power, biomass conversion with high-yielding and efficiency-enhancing devices, etc. - are generally concentrated in developed countries. Technology and know-how that reduce the vulnerability and increase the resilience to the adverse effects of climate change - for example, more advanced dikes systems, sophisticated early warning systems etc. - are also rare in the southern hemisphere. Therefore, it is very difficult for most developing countries to promote a fast change of its carbon-intensive production and increase their efficiency levels.

However, there are instruments and mechanisms

that could be used to stimulate the adoption of options that cause less damage to the climate ("climate-friendly options") at a lower cost. This would allow the developing countries to advance in a more environmentally responsible way than the current developed countries did in the past. This way, equipment and processes that imply minor GHG emissions would be used directly (leap-frogging) (Machado-Filho & Poppe, 2011).

Although countries have made commitments regarding the transfer of technology under the scope of the multilateral climate change regime, there has been little progress in its implementation. One of the main reasons for this deficiency is the limited capacity of Governments in transferring technologies that are mostly owned by companies. Therefore, it is essential to find intelligent and innovative ways of dealing with issues of intellectual property rights so that they no longer constitute a barrier to the effective transfer of technology.

The development and strengthening of endogenous capacities and technologies of developing countries - including cooperative actions of research, development and demonstration - need to be encouraged. For this to occur, it is important to strengthen the national innovation systems and technological innovation centers, as well as developing and implementing national plans for mitigation and adaptation technology (Decision 1/COP 16, paragraph 129). Obviously, financing and investment to promote this whole process are fundamental.

#### 4.3 Challenges and opportunities in Brazil

Within the scope of the multilateral climate change regime, Brazil is considered to be a proactive country in the negotiations, having an important role in mobilizing triangular resources promoting the North-South-South Cooperation, and contributing with its expertise in the areas of fighting deforestation and of renewable energies. Additionally, Brazil has good transit and capacity for positive influence with the binomial USA-China (the main individual consumers of coal today); countries that have "the ability to ratify or destroy our chances of success" (Giddens, 2009: p. 277).

Internally, the matter of finance for adaptation and mitigation to climate change is permeated by the same discussion on what would be the



mobilization of “new and additional” resources in the international level. That’s because Brazil already had a series of financial instruments that were not created with the specific purpose of fighting climate change. Many instruments have been created in recent decades to serve other purposes, such as, for example, the National Fund for the Environment – FNMA, the National Forestry Development Fund – FNDP, constitutional funds for financing, and the forestry financing instruments (see Box 2 on national financing mechanisms).

However, indirectly, many of the actions financed by these instruments promote a considerable reduction of GHG emissions. Several other initiatives recently implemented or on the implementation stage have already been developed with the specific goal of contributing to the inflection of the growth rate of GHG emissions curve in the country.

As an example of this last line, there’s the Amazon Fund, a public fund of an accounting nature, managed by the National Economic and Social Development Bank (BNDES) (Decree 6,527/2008) which promotes actions to prevent, monitor and combat deforestation, besides supporting the conservation and sustainable use of forests in the Amazon biome predominantly.<sup>7</sup>

Besides, there is the National Fund on Climate Change (Climate Fund), which is a fund of accounting nature, linked to the Ministry for the Environment (MMA). It offers two modalities of financing: (1) refundable financial assistance (loans) through the BNDES Climate Fund Program; and (2) non-refundable financial assistance, through a Committee chaired by the MMA. Uncertainties about the future of the Climate Fund have been raised, particularly in the light of the discussions on new legislation concerning the redistribution of royalties from oil production.

Regarding market-based instruments at the national level, the only effective experience was via the organization of the Market of Certified Emission Reductions (CERs) through the Clean Development Mechanism (CDM) of the Kyoto Protocol. In Brazil, the CDM has an important role in the financing for the reduction of GHG emissions, especially in the energy sectors (encouraging the production of renewable energy and the increase of energy efficiency), reforestation and waste (Santos, Mendes and Alves, 2012).

Another way to show the importance of CDM in Brazil is estimating the amount of external resources to enter the country during the first period of credits (crediting period).<sup>8</sup> When considering a value of US\$ 15/tCO<sub>2</sub>e, this amount reaches a value around US\$ 5.8 billion or US\$ 750 million a year. If the CERs obtained through CDM project activities were considered as exports, in 2009 it would rank 16th on this category (BRAZIL, 2010). The following chart presents the latest data produced by the federal government and published in the Second National Communication of Brazil to the United Nations Framework Convention on Climate Change.

However, it is known that the future movement of investments through market-based instruments, as is the case of the CDM depend on international prices fluctuation of CERs, which depends directly on the ambition of the countries on Annex I to effectively meet its emission reduction targets laid down in the second period of the Kyoto Protocol, agreed to end on January 1st, 2020 (Decision 1/ CMP. 8).

Thus, a way of building national means to maintain and enlarge the GHG reductions in Brazil would be through effective fiscal instruments and economical arrangements. In relation to the Brazilian Federal reality, it should be noted that there are several institutional and economic instruments that, based on Brazilian environmental legislation, may be used to expand the financing and mobilize resources to bear the costs of mitigation and adaptation actions in Brazil. The Federal Constitution of 1988 defines the attributions of administrative and legislative competences of the federal entities, including the capacity of Subnational Governments (SNG) of executing policies on climate change, in particular through the interpretation of these as environmental matters. A distinction is made between private and common administrative competences and those of private and contestant law of the various federative entities.

In this sense, taxes are useful tools.<sup>9</sup> The polluter-pays principle governs the application of environmental taxes and, based on the precautionary principle, the monitoring and control of emissions should be carried out by the public service, whose cost would be covered by budgetary resources. It should be noted that the

→ **Note 07**  
Up to 20% of the resources can be used in other Brazilian biomes and in other tropical countries.

→ **Note 08**  
According to the CDM’s rules, each project activity may have a fixed crediting period (10 years) or renewable (3 periods of 7 years).

→ **Note 09**  
“Among the appropriate economic instruments to environmental protection and, in particular for the impacts of the economic activity on climate change, taxes are presented as a particularly useful tool. Taxes can be classified, among other criteria, by its purpose. Among them, a distinction is made between the so-called fiscal taxes, whose purpose is to raise financial resources and extra-fiscal, whose goal is to correct unwanted social situations and lead the economic activity, stimulating or discouraging specific activities” (GARSON, et. al., 2013, pp. 73-74).

### **Box 2 National finance mechanisms**

Since 1989, several funding mechanisms began to be created in Brazil, related to sustainable development. Among them some funds and the most relevant national mechanisms that can work effectively to accomplish mitigation and adaptation actions in Brazil are highlighted:

- **Amazon Fund** - Provides non-refundable financial assistance (donations) to institutions of public administration, public and private companies, and civil society organizations. The resources come basically from international donations (Norway and Germany) and Petrobras S.A. They totaled about R\$ 129 million in March 2013. The fund raising is conditioned to the reduction of emissions from deforestation.

- **Climate Fund** - It can be considered as one of the main financing instruments of the National Policy on Climate Changes (PNMC). It was created by the Law 12,114 2009 and regulated by Decree 7,343 / 2010. In 2011, the Climate Fund had resources of R\$ 230 million (R\$ 30 million non-refundable and R\$ 200 million refundable). In 2012, its budget was about \$ 360 million.

- **National Environmental Fund (FNMA)** - Established by the Law 17,797 / 1989, is the oldest mechanism for financing socio-environmental projects in Brazil. Of accounting and financial nature, linked to the Ministry of Environment (MMA), has as its objective the development of projects aimed at the rational and sustainable use of natural resources, including the maintenance, improvement or restoration of environmental quality in order to raise the quality of life of the Brazilian population. It works through edicts of induced demand projects or by spontaneous demand, which can contemplate directly or indirectly the climate issue. Since its Foundation, it has already benefited more than 1400 projects and mobilized around R\$ 230 million.

- **National Forest Development Fund (FNDF)** - Public fund of accounting nature held within the scope of the General Budget of the Union and managed by the Brazilian Forest Service. Established by Law 11,284/2006 (Public Forests Management Law) and regulated by Decree No. 7,167/2010. Aims to foster the development of sustainable forestry activities in Brazil and promote technological innovation in the sector. Added up the years of 2010 and 2011, there were resources in the order of R \$ 4.8 million.

- **Constitutional Funds of financing and federal funding programs** - Created in 1989, with the aim of supporting the economic and social development in the Northern regions (Constitutional Fund of the North - FNO), Northeast (Constitutional Fund of the Northeast - FNE) and Midwest (Constitutional Fund the Midwest - FCO). The guidelines for the application of resources are aligned to the National Regional Development Policy (PNDR).

The Resources derive from the collection of income taxes and earnings of any kind on industrialized products. They have specific programs to support actions aimed at sustainable development. In this sense, the following programs are highlighted: Pronatureza (FCO): Banco do Brasil; FNE Verde, Pro-Environmental Recovery, FNO Biodiversity: Banco do Nordeste; and Sustainable Amazon, FNO Biodiversity: Banco da Amazônia. Other relevant initiatives are Pronaf Forest, Pronaf Eco, Propflora, Produsa, BNDES Florestal, BNDES Forest Compensation, BNDES support for Investments in Environment and Finem.

punishment of unlawful conducts must not be carried out by means of environmental taxation. The graduation of a tax, established, for example, according to the level of GHG emissions of an economic activity, shows the character of extra-taxation of its use, discouraging that the emissions approach the limit set by the State actor. If the purpose of a Government is to punish those who exceed a limit, it will apply fines and not taxes.

However, the relevant issue is that when we are dealing with such legal precepts in the

Subnational Governments level, it is challenging to reconcile economic development with the need for climate protection. Due to the Brazilian federal arrangement, there is a possibility that the adoption of a state rule of such nature conflicts with that of a neighboring state. Such a context would tend to intensify the competition among states to attract companies, worsening even more the already complicated "placement war" recurrent in Brazil, without having the practical effects of reducing GHG emissions to the atmosphere.

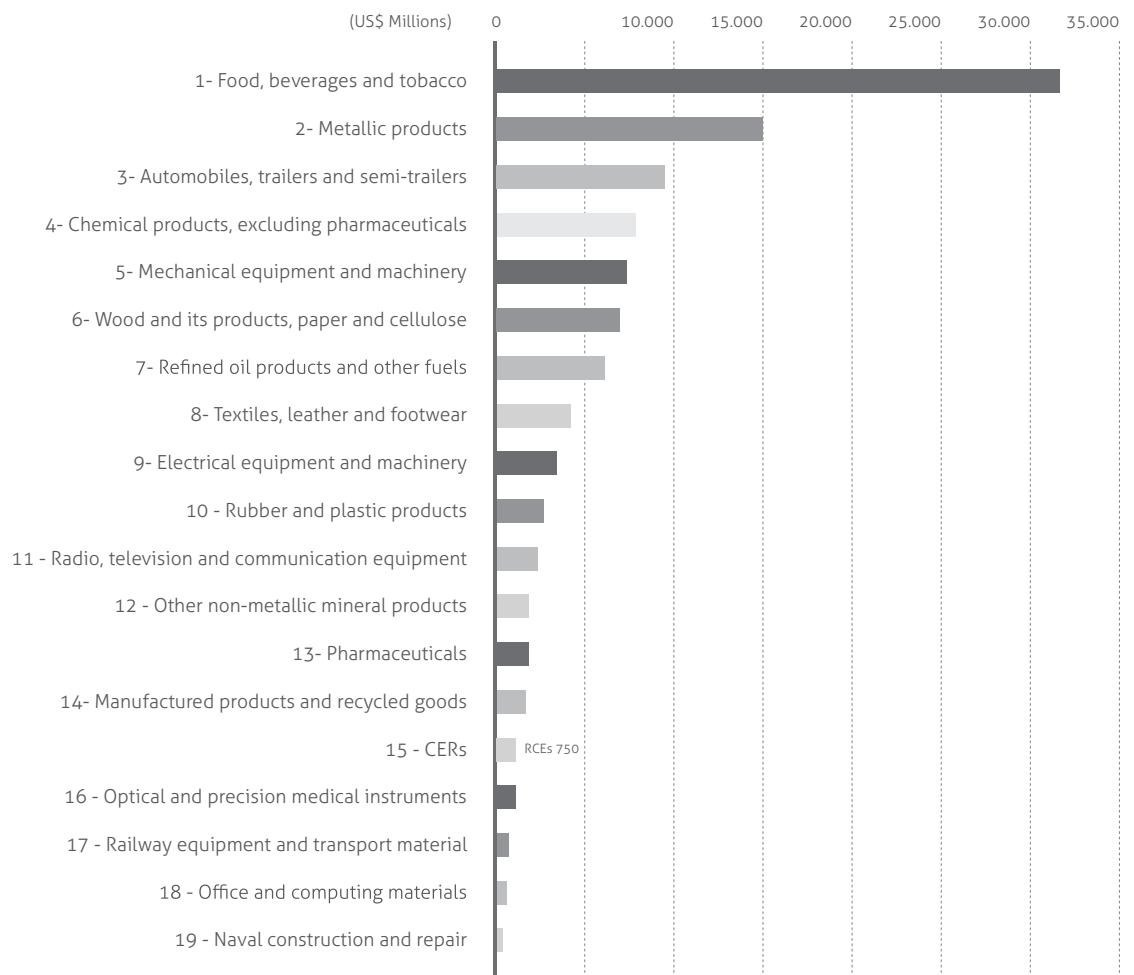


Image 2 Brazilian exports in the industrial sector – 2009 (US\$ millions FOB). Source: Brasil, 2010.

In addition, any scheme of taxation, especially in Brazil, brings to light the difficulty of efficient application of resources collected by public entities in order to achieve the desired purposes; in this case, promote effective actions for the reduction of greenhouse gases.

The insufficient resources restrict bolder actions,

like for example, waivers of revenue by granting tax incentives. Such policies tend to find resistance in the treasury area, though they are likely to involve, in the future, a reduction on expenditures, for example, in reducing vulnerabilities. Such perception reinforces the importance of a regulatory action of federal, state and municipal



governments in a coordinated manner with the results of the international climate change negotiations. Recently, it was seen the adoption of policies of renunciation of revenue exactly in the opposite direction: the recent reductions in the Tax on Industrialized Products (IPI), particularly for motor vehicles, resulted in an increase in the sale of those goods and, consequently, higher GHG emissions.

As mentioned earlier, technology and innovation are fundamental in the promotion of the fight for climate change. Despite the investments in technology are usually associated with the private sector, the public sector plays a crucial role in establishing an environment prone to low-carbon technologies, especially regarding the reduction in political uncertainty. In this sense, the Brazilian Government has not acted coherently with the promotion of a climate of stability that encourages long-term investments. A recent intervention by the Federal Government in the rules for the granting of electric power plants is a good example of this.

Furthermore, it is essential to recognize the need to enlarge the synergies between the actions of the climate change agenda and the implementation of infrastructure projects, including the ones on urban mobility (Machado-Filho, 2009), energy efficiency, sanitation, solid waste removal and treatment, among others. This way, the national sustainable development agenda would be placed at the center of the debate, increasing the chances that the funding for adaptation and mitigation actions generates positive externalities.

## 5 Conclusion

Issues related to climate change are primarily questions about the imperative of development. Thus, when speaking in funding to fight climate change, we are talking about broader issues relating to energy security, technological innovation, economic competitiveness, to the control of access to natural resources, production systems and sustainable and unsustainable consumption, and even to the physical safety of populations.

The complexity of the issues involving global climate change is mainly given due to the fact that, for the future dimension and scale of the problem, it is extremely challenging to share the

responsibilities. In the context of its multilateral regime, the exercise of burden sharing among countries, has become a “battleground” based on their different points of view, be this about intra-generational or less noble interests, such as economic advantages or maintaining unsustainable standards of production and consumption.

Unfortunately, a consensus has not yet been reached on a clear direction for which the States should guide their conduct in order to overcome the conflict between their pursuit of national interests and the need to protect the Earth’s climate system for the benefit of all, including future generations.

Therefore, Giddens, when adopting the notion that the matter is not in fact “save the planet” (because life on the planet will survive independent of humans), sees the problem as a huge challenge, but also as an incredible opportunity to preserve and enhance a dignified lifestyle for humans in harmony with the Earth.

Beyond the political rhetoric, it should be recognized that global climate change is a considerable challenge and activities to deal with the problem, be them related to mitigation or adaptation, will require a significant amount of financial resources. The main difficulty, however, is to make the bridge between the expectations of funding and the political realities.

In all areas – global, regional, national or local — it becomes crucial to recognize the need to increase the synergies between the actions of the climate change agenda and the low-carbon technological innovation, change in the production and consumption patterns, implementation of infrastructure projects, and safety of populations. Thus, the discussion would not be based just on getting new resources, but also in how to use the existing resources in a more rational and efficient way to promote the transformation for a more sustainable world.

In this paper, it was stated that the increase in public and private investment in the development of technologies and their implementation, dissemination and transfer is crucial to promote a transformation of low carbon societies. In this sense, it is essential that the public sector acts jointly with the private sector, in order to promote a conducive environment for technological

innovation and for the investment in activities that can promote GHG reduction and increase the resilience of societies.

The international community has debated on how to generate the necessary funding on a timely basis to face the challenge ahead related to both the mitigation and adaptation to global climate change. However, allegations, suspicions, fragmentation of sources and lack of long-term vision have been the keynote of the debate. The systematic increase in the provision of funding in a timely manner can also reinforce the confidence between countries and generate progress in the context of the UNFCCC negotiations, but this promise cannot be used as "bait" to attract developing countries to more ambitious commitments. The Parties must meet their commitments in good faith.

In this sense, both public and private actors should be persuaded that generating an environment prone to finance and promote an effective mobilization of resources for both mitigation and adaptation actions, are good investments for a future less emissive and safer for all.

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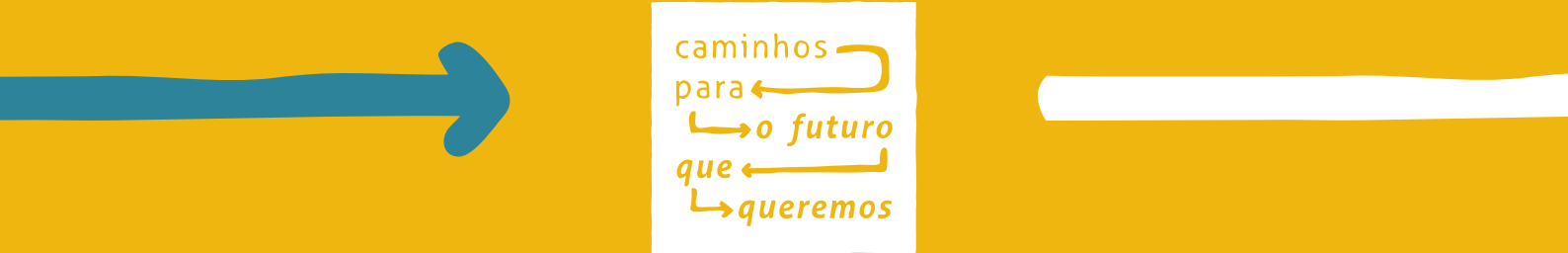
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The Project "Pathways to the Future We Want" represents the continuation of the efforts promoted by CEBRI to advance the knowledge on the international agenda for sustainable development. The main objective of this initiative is to contribute to the implementation of the decisions agreed by countries in multilateral meetings.

**Finance and investment flows for mitigation and adaptation to climate change constitute the core topic of this article.**